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OF THE

AMERICAN SOCIETY OF CIVIL ENGINEERS

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SWEENEY, JOHN JOSEPH.
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SYKES, JAMES.
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Memoir of. 1849.

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Memoir of. 1915.

WESTERGAARD, H. M.
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WEYMOUTH, FRANK ELWIN.
Memoir of. 1712.

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Memoir of. 1862.
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WILLIAMS, JOSEPH WHITE.
Memoir of. 1864.
WILLS, RONALD BLAIR.
Memoir of. 1865.
WILSON, HANSON ZIMRI.
Memoir of. 1911.
WILSON, WARREN E.
"Pipe-Line Flow of Solids in Suspension: A Symposium: Mechanics of Flow, with Noncolloidal, Inert Solids." 1576.
WINN, WALTER SCOTT.
Memoir of. 1867.
WISE, ALBERT JOSEPH.
Memoir of. 1869.
WISLER, C. O.
"A Direct Method of Flood Routing." 1519.
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Memoir of. 1875.
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